

On some Chalcididae and Pteromalidae (Hymenoptera), with
descriptions of new genera and species from Africa
and one species from Asia

by

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In the Chalcididae a new genus, *Youngaia*, and the following five species are described: *Chalcis vera* from South Africa and South West Africa, *Youngaia spinosa* from Ghana, *Hockeria nudaureliae* from South Africa and Mozambique, *Hockeria crassa* from Angola and South Africa (both parasites in pupae of saturniid moths) and *Hybothorax palparicida* from South Africa. The known African species of *Hockeria* are listed, five of them being transferred from other genera and two being removed from *Hockeria* to *Lasiochalcidia*. Lectotypes of seven species of *Hockeria* and of *Chalcis insolita* Walker are designated; the latter species is transferred to *Solenochalcidia* where *S. bucculenta* Steffan becomes its synonym. In the Pteromalidae a new genus *Watshamia* is established, with three new species: *W. versicolor* (type-species) from South Africa and Rhodesia, *W. turneri* from South and South West Africa, and *W. malaica* from West Malaysia (the last a parasite of gall-making Cecidomyiidae).

The new taxa described in this paper are based partly on specimens submitted for identification to the Commonwealth Institute of Entomology or on interesting new material collected or reared by several colleagues, mainly by my friend Rev. A. Watsham (of Salisbury, Rhodesia). Where possible the material was supplemented by specimens from the collections of the British Museum (Natural History) (= BMNH). Other depositories of the material include NCI, Pretoria (National Collection of Insects, Plant Protection Research Institute) and MNHN, Paris (Muséum National d'Histoire Naturelle).

CHALCIDIDAE

CHALCIS Fabricius

Chalcis vera spec. nov., figs 1-4

♀. 5, 1-5, 3 mm. Black, including antennae, but following parts whitish: elongate spots on lower frons on either side, dorso-lateral spots on pronotum, two round spots on scutellum, fore and mid femora externo-apically and corresponding tibiae except on inner side, hind femur with one inner spot and two spots externally in distal third, hind tibia subbasally, and abdominal petiole; tarsi pale testaceous; tegula partly pale; hind trochanters and body of gaster reddish brown; wings slightly infumate.

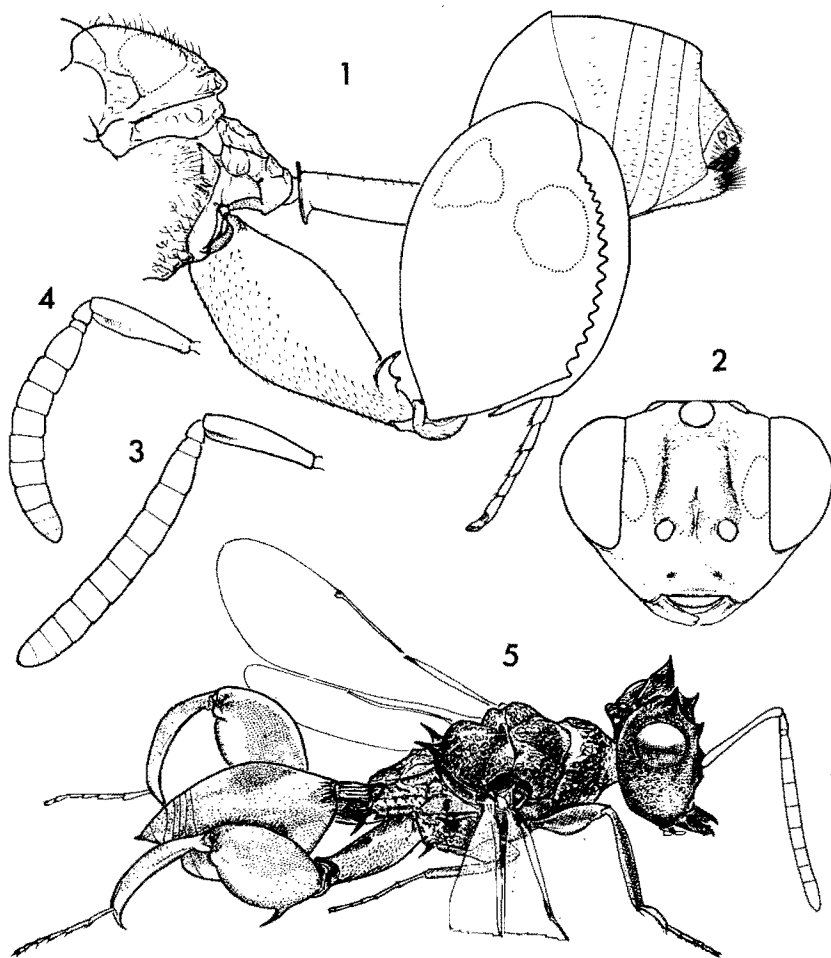
Pubescence of head inconspicuous, short; punctures dense only on sides of frons, but very sparse and rugose on lower face, obliterating the curved subocular suture. Head as broad as mesoscutum, in dorsal view (along bottom of scrobes) 2,4 times as broad as long, with temples almost nil, strongly receding; frons hardly produced beyond eye level, interantennal tooth appearing narrow, parallel-sided. In facial view head fully 1,4 times as broad as high, with ocellar area slightly protruding above eye level and genae nearly straight, converging. POL about 2,5 times OOL, latter slightly less than diameter of lateral ocellus. Relative measurements: width of head 45,5, of frons 23,5, eye 23:16, malar space 8, scapus 19, flagellum plus pedicellus 51. Antennae inserted slightly above lower ocular line (figs 2, 3); scapus just reaching level with vertex; flagellum broadly filiform, tapering basally.

Thorax moderately densely punctured, whitish pubescence very short, subdecumbent. Sides of pronotum converging considerably forwards; shoulder obtuse-angular, although with sharp vertical carina; hind margin deeply emarginate. Notaular furrow rather narrow posteriorly. Lateral margins of axillae converging backwards, almost straight. Scutellum barely broader than long, its dorsum moderately convex, without median depression; carina separating frenal strip medially slightly curved caudad but not lowered. Median part of propodeum distinctly produced caudad, bearing a broadly pentagonal area sending off, as branches, the short median carina and, towards spiracles, the diverging sublateral carinae which are parallel to plicae situated further laterad; sparse pubescence confined to sides. Convex metapleurum with smooth and fairly broad interspaces between piliferous umbilicate punctures, same as on convexities in front of mid coxae. For hind leg see fig. 1; hind coxa relatively stout; femur with inner basal tooth short, subrectangular, basal tooth of outer row small, followed by 12–14 almost regular teeth; femur externally with fine and only moderately dense puncturation, short hairs hardly reaching beyond next puncture. Hind tibia on outer side longitudinally strigose-rugulose. Length of tarsus only 0,8 maximum breadth of femur, claws rather short.

Abdominal petiole longer than hind tarsus, nearly smooth, in dorsal view about four times as long as broad, slightly narrowing anteriorly behind the laminate basal rim which forms a rounded dorsal lobe and smaller lateral lobes broadly connected with ventral tooth; dorsum of petiole on either side with line of sparse thin hairs. Body of gaster about 1,5 times as long as petiole, dorsally bare and smooth; sixth tergite convex, slightly hairy; epipygium short, convex. Hypopygium reaching level with cerci; its apex broad, subtruncate, at sides bearing tufts of longish hairs; ventrally smooth and bare along median line. Black ovipositorial sheaths not exceeding apex of gaster.

♂. 4,7 mm. Similar to ♀ but differing mainly in the following. Hind femur externally with subapical dorsal spot missing. Temples rounded, slightly conspicuous. OOL less than 0,7 diameter of lateral ocellus. Eye large, its length fully 1,1 times breadth of frons and 4 times length of malar space. Scapus reaching about middle of median ocellus, broadened (fig. 4), with smooth ventral boss extending over nearly whole apical half. Flagellum in lateral view stoutest in basal third, slightly tapering apically, its length combined with pedicellus about equal to breadth of head. Slender gastral petiole about 4,5 times as long as broad. Outer basal tooth of hind femur slightly longer than following teeth. Last sternite truncate at apex, very slightly depressed before truncation, on depressed part with thin sparse erect hairs which are shorter than denser hairs laterally.

Biology. Unknown.



Figs 1-4. *Chalcis vera* spec. nov. 1. Hind leg with gaster and part of thorax (♀ holotype). 2. Head, anterior aspect, ♀. 3. Antenna of ♀, outer aspect. 4. Antenna of ♂, outer aspect. Fig. 5. *Youngaia spinosa* gen. & spec. nov. (♂ holotype).

MATERIAL EXAMINED. Holotype ♀, SOUTH WEST AFRICA: Gross Otavi, xi.1973, A. Watsham; deposited in BMNH, London.

Paratypes: S. W. AFRICA, 2♀ 1♂ same data as holotype (partly in NCI, Pretoria and Rev. A. Watsham's collection, Salisbury). SOUTH AFRICA: Wonderboom near Pretoria, x.1931, 1♂, J. Ogilvie (BMNH).

This is the first species of the genus *Chalcis* F. (understood here in the customary sense, i.e. the same as *Smiera* Spinola) from the Ethiopian region. It does not seem to be very closely related to the other known species of the genus. From all of them it differs

mainly by its short pubescence, sparse puncturation, narrower frons, shorter antennal scapes, unusually long and virtually smooth gastral petiole, shorter tarsi, and from the Mediterranean species also by the whitish maculae on head and thorax. The short and sparser pubescence may be possibly in connection with a different habitat of its unknown host. The Mediterranean species are parasites of Stratiomyid larvae in shallow waters and the thick pubescence allows them to attack the hosts under water.

YOUNGAIA gen. nov.

Type-species: *Youngaia spinosa* spec. nov.

This genus belongs to the Dirhininae, a rather compact group of species sometimes classified as several genera (Masi, 1947), but sometimes as a single genus, *Dirhinus* Dalman. Irrespectively of this, *Youngaia* differs from all the numerous species by bearing strong slender spines on various parts of the body (fig. 5): on apex of scutellum, on propodeum on either side laterad of spiracles, on thorax ventrally in front of each hind coxa, ventrally on abdominal petiole and on hind femur at base of the comb, instead of the basal tooth. Also protuberances on frons, analogous to those of *Pareniaca* Crawford, end as sharp spines. Ocellar area strongly raised. Malar space without coarse puncturation. Pronotum and mid lobe of mesoscutum distinctly raised on either side of median line; antero-lateral corners of pronotum rectangular. Propodeum with percurrent though thin median carina. Hind coxa pubescent on broad dorso-lateral area, dorsal edge with low tooth just behind middle.

Named in honour of my friend, Dr S. Endrödy-Younga, of the Transvaal Museum in Pretoria.

Youngaia spinosa spec. nov., fig. 5

♂. 5 mm. Black, only tarsi reddish brown. Fore wing brownish infumate in distal half, with darker spot at stigmal vein and at parastigma, proximally paler, with moderately dark streaks diverging along basal and cubital folds, with pale part between them extending below marginal vein.

Pubescence extremely short, white, on head inconspicuous. Parascrobal area on either side dorsally with conical sharp horn, followed below by slightly shorter sharp tooth and an obtuse-angular tooth formed by scrobal carina not far above each torulus. Scrobal channel very broad, dorsally delimited by strong arcuate carina between the horns and running more than half diameter in front of median ocellus; bottom of scrobes reticulate in lower two-fifths, cross-striate more dorsally. POL about half OOL. Otherwise see fig. 5. Relative measurements: width of head 84, frontovertex 55, eye 29:26,5, malar space 40, scapus 58, flagellum plus pedicellus 103. Antennae inserted about half way between lower ocular line and mouth margin, toruli wide apart, between them a blunt cross-ridge; tentorial pits broad and deep; clypeus swollen, almost smooth, its lower margin truncate. Antennal pedicellus twice as long as broad, hardly shorter than seventh funicular segment (preclava). Flagellum subfiliform; anellus twice as broad as long, first funicular segment fully 1,8 times as long as broad, the following ones decreasing in length; clava not distinctly subdivided, 2,3 times as long as broad; longitudinal sensilla on funicular segments in several rows, on the first in 4-5, on the seventh in 3 rows.

Pronotum anteriorly with small tooth in median line. Mesoscutum posteriorly and scutellum anteriorly with slight median keel. Propodeum: broad median flat part conspicuously produced caudad, with subparallel sides which are about 1.5 times as long as breadth of petiole; antero-lateral areas clothed with rather dense hairs, especially in broad pit just behind each spiracle. Hind tibia dorsally with short stout spinulae, in apical third distinct tarsal groove.

Abdominal petiole slightly longer than broad, in dorsal view its anterior angles obtuse, posterior ones slightly sharp. First gastral tergite very large, mainly smooth (except for small transverse streaks of fine punctures latero-posteriorly, there with a few sparse adpressed hairs), dorsally flattened, at base slightly depressed laterad of the very short transverse area with 5–6 short longitudinal keels. Following tergites sublaterally each with one sparse row of adpressed hairs. Apex of gaster acuminate (female-shaped) because of the slightly projecting pointed last sternite.

♀. Unknown.

MATERIAL EXAMINED. Holotype ♂, GHANA: Ashanti, Juaben, 6°50'N 1°25'W, 340 m, on stream bank, 19.ii.1967, S. Endrödy-Younga; deposited in BMNH, London.

HOCKERIA Walker

Hockeria nudaureliae spec. nov., figs 6–9

♀. 4.6–5.4 mm. Black; base of flagellum with pedicellus, sometimes also more or less scapus and apex of antennae, reddish; fore and mid tarsi fuscous. Forewing with two incomplete fuscous bands, narrower one below marginal vein, broader in three-quarters of wing, area between them below stigma subhyaline, as well as basal third of wing. Short pubescence of body whitish.

Head dorsally (along scrobal bottom) 2.1 times as broad as long (fig. 7), with temples only moderately receding and appearing 0.3 as long as eye in this view. POL 2.2 times OOL, latter nearly 1.5 times the long diameter of lateral ocellus. Puncturation dense, moderately fine, hairs very short, each curved to about centre of next puncture. Inner orbits with a trace of low carina joining above the other side through ocellar triangle as an arched and bluntly raised smoother line between punctures. Head in facial view subtrapezoidal, 1.24 times as broad as high (measured down to end of malar space). Scrobes deep. Relative measurements: width of head 55, of frontovertex 27, distance between lower angles of eyes 35, eye 26.5:20, malar space (along weak straight subocular suture) 19, mouth between corners at upper mandibular condyles 14.5; scapus 32:5, flagellum plus pedicellus 70. Antenna (fig. 8) very slender; scapus reaching level with lower margin of ocellus; pedicellus slightly longer than second flagellar (first funicular) segment, latter twice as long as broad, first flagellar segment 1.05 times, eighth 1.05 times, clava 2.4 times as long as broad.

Thorax dorsally rather finely regularly punctured, fairly shiny, interspaces on posterior part of mesoscutum and on scutellum smooth and nearly as broad as punctures, on pronotum finely cross-striolate; pubescence extremely thin and short. Sides of pronotum subparallel, about as long as breadth of side lobe of mesoscutum posteriorly. Scutellum 1.1 times as long as broad, the rather low marginal carina raised apically into two short obtuse-angular (120°) teeth. Propodeum medially sloping at about 30°, with dense and almost regular areolation with reticulate bottom (*Stomatoceras*-type), with slightly conspicuous irregular submedian carinae narrowly approaching each other

anteriorly and there connected with strong subbasal carina (subparallel to anterior margin, originating mesad of spiracle), with broadly diverging plical (sublateral) carinae and lateral carinae forming two short teeth behind each spiracle. Mesosternal shelf in front of mid coxa nearly 0,55 as long as coxa ventrally. For hind femur see fig. 6; its outer surface microscopically squamose-reticulate, punctures minute, very dense, as is the very short pubescence. Hind tibia with one externo-ventral carina. Forewing: postmarginal vein at most about twice as long as the stigmal; a streak of dense pilosity below submarginal vein; costal cell distally on dorsal surface with some pilosity, on ventral surface with dense complete line of rather short hairs.

Gaster slightly shorter than, or up to as long as, the thorax less propodeum; broad, convex, posteriorly blunt, as epipygium and tip of ovipositor normally are not seen in dorsal view. First tergite covering half of gaster, mainly smooth but with fine reticulation and some punctures submedially, less so in median line. Hind margin of second tergite straight. Sixth tergite vertical, its pilosity very thin and short, punctures shallow, whole surface dull, reticulate-granulate, as also are the preceding tergites with exception of the dorsum. Epipygial keel barely as long as distance between cerci.

♂. 4,1 mm. Black including antennae. Wings faintly infumate, without bands. Eyes distinctly pubescent. Interspaces on thoracic dorsum about half as broad as punctures but still surface rather shiny. Gaster still shorter than in ♀. Antenna (fig. 9): scapus relatively slender, reaching one diameter below ocellus; flagellum plus pedicellus about 1,5 times the breadth of head, its segments not conspicuously curved.

Variation. The females from Mozambique have slightly stouter antennae, with the second flagellar segment only 1,75 times, the eighth 0,9 times as long as broad.

Hosts: *Nudaurelia cytherea cytherea* (F.) in S. Africa, *Gonimbrasia belina* (Westwood) in Mozambique (Lep.: Saturniidae).

MATERIAL EXAMINED. Holotype ♀, SOUTH AFRICA: Cape Province, Klutjieskraal near Wolsley, ex pupa *N. c. cytherea*, 3.iv.1968, H. Geertsema; deposited in BMNH, London.

Paratypes. SOUTH AFRICA: 9 ♀, 2 ♂, same data as holotype; Cape Province, Pondoland, Port St. Johns, v.1923 & 1924, 2 ♀, R. E. Turner. MOZAMBIQUE: Lourenço Marques, ex *G. belina*, x.1971, 5 ♀ (per C.I.E., coll. A5019). Some paratypes deposited in NCI, Pretoria, in MNHN, Paris and in BMNH.

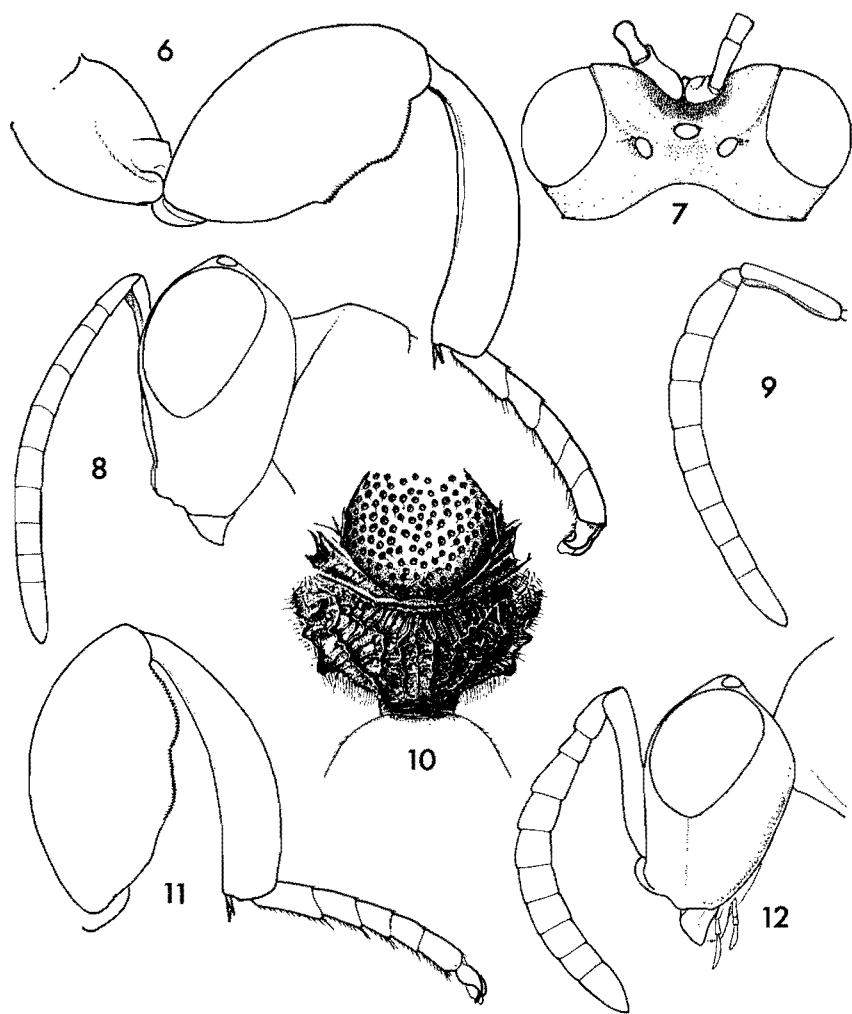
For comparison with the previously described African species see comments under *Hockeria crassa*.

***Hockeria crassa* spec. nov., figs 10–14**

♀. 3,9–6,2 mm. Black; antennae basally (segments 1–4) and fore and mid tarsi dark reddish. Forewing with two brown cross-fasciae narrowly connected in middle, between them at stigma a hyaline spot with white pubescence; proximal dark band narrow and slightly oblique; basal third of wing subhyaline, distal fifth slightly infumate.

In many respects very similar to *H. nudaureliae* described above, therefore mainly the differences between the two species stressed here.

Puncturation coarser and slightly less dense than in *nudaureliae*, body still shinier. Head dorsally 2,05 times as broad as long, in facial view 1,26 times as broad as high. Relative measurements: width of head 52, frontovertex 26,5, distance between lower corners of eyes 35, eye 23,5:17,5, malar space 17, scapus 29,5 (:5,3), flagellum plus pedicellus 63. Antenna very stout (fig. 12), but hardly subclavate; scapus 6,6



Figs 6–9. *Hockeria nudaureliae* spec. nov. 6. Hind leg of ♀. 7. Head of ♀, dorsal aspect. 8. Head of ♀, lateral aspect. 9. Antenna of ♂, outer aspect. Figs 10–12. *H. crassa* spec. nov., ♀. 10. Sculpture on scutellum and propodeum. 11. Hind leg, ♀. 12. Head, lateral aspect.

times, pedicellus (laterally) twice as long as broad, first flagellar segment subquadrate, second 1,4 times, eighth 0,83 times, clava 1,8 times as long as broad.

Propodeum (fig. 10) medially sloping at 15–20° only, with sculpture not quite of *Stomatoceras*-type, although on bottom not very shiny, but areoles more irregular and median one usually subdivided by weaker median carina not reaching base; submedian carinae, sublateral carinae (plicae) and subbasal ones (converging meso-caudad from spiracles) distinctly pronounced, connected by numerous weaker secondary carinulae or rugae; subbasal carina in mesal part usually turning backwards and not or hardly reaching submedian carina; lateral carina subhorizontal down to the rather sharp postero-lateral tooth (hind tooth in fig. 10), incised at outer end of spiracle and thus forming a third tooth in front of excision. Hind femur (fig. 11) with comb starting at 0,45 length of femur, at base of first wavy lobe which is similar to distal lobe but weaker than in *H. nudaureliae*. Forewing bare below submarginal vein, costal cell bare dorsally, on ventral surface with the row of longish hairs reduced to one loose line except in basal third.

Gaster (fig. 13) with sixth tergite very steep but usually not quite vertical, short epipygium slightly showing in dorsal view. Fine puncturation on first tergite mainly in a triangular area, not weaker medially. Second tergite with hind margin appearing broadly emarginate; hairs on its sides much shorter than those on the following tergites.

♂. 3,2–4,5 mm. Black, only fore and mid tarsi reddish. Wings subhyaline, with a faint infumation below marginal vein. Similar to ♂ of *H. nudaureliae* in form of body, but hind femur as described in ♀ (fig. 11), propodeum of the type shown in fig. 10 (but the secondary carinulae usually slightly reduced with the size) and differing in form of antenna (fig. 14): scapus reaching ventral margin of ocellus, stout, only 3,7 times as long as broad in basal fifth, narrowest in three-quarters; anellus conspicuous, about one-third as long as the globose pedicellus; flagellum plus pedicellus hardly 1,4 times as long as breadth of head, large segments relatively broader than in *H. nudaureliae*.

Hosts: *Imbrasia macrops* (Rebel) in Angola, *Nudaurelia cytherea cytherea* (F.) in South Africa (Lep.:Saturniidae). Parasite of pupae.

MATERIAL EXAMINED. Holotype ♀, ANGOLA: Chinguri, ex *I. macrops*, 1.x.1969, J. P. de Carvalho & Helder; deposited in BMNH, London.

Paratypes. ANGOLA, 85 ♀ 8 ♂, same data as holotype. SOUTH AFRICA: Cape Province, Klappmuts near Paarl, ex *N. c. cytherea*, 11.iii.1968, 10 ♀, H. Geertsema (per C.I.E., coll. A 6373). In BMNH, NCI, Pretoria and MNHN, Paris.

Hockeria nudaureliae and *H. crassa* can be easily separated from all the African species of the genus known to me, described or undescribed, by the fairly shiny thoracic dorsum with rather sparse puncturation and the unusually obtuse gastral apex in the females, from the individual species furthermore by various other characters, mainly by the form of the antennae, scutellum, propodeum or the hind femur, apart from colour or size.

Among the described Chalcididae the following species of the Ethiopian region belong to the genus *Hockeria* Walker:

- H. exarata* (Waterston, 1916), **comb. nov.** (from *Stomatoceras*); Malawi.
- H. figurator* (Walker, 1862), **comb. nov.** (from *Halticella*); Gambia.
- H. filicornis* Schmitz, 1946; Zaire.
- H. fulvipes* Masi, 1917; Seychelles.
- H. intaillata* Schmitz, 1946; Zaire.

H. liberator (Walker, 1862), transferred by Steffan, 1953; South Africa, Mozambique.

H. micans (Waterston, 1915), **comb. nov.** (from *Stomatoceras*); Nigeria, Zambia, Malawi.

H. minator (Walker, 1862), **comb. nov.** (from *Halticella*); S. Africa.

H. octodentata (Cameron, 1905), transferred by implication by Steffan, 1953; S. Africa.

H. schulthessi (Ferrière, 1935), **comb. nov.** (from *Stomatoceras*); Nigeria, Uganda.

H. testaceitarsis Cameron, 1908; Cargados Island (N. of Mauritius).

The list does not include the species classified as *Afrochalcis* Schmitz or *Afrhoc-keria* Steffan, nor the two species described from North Africa, viz. *Hockeria afra* Masi, 1933 and *H. aegyptiaca* Masi, 1936. Another species, described as *Halticella* (*Stomatoceras*) *mimosae* Schulthess-Schindler, 1899, which according to the four syntype females in the BMNH (the lectotype should be designated from the specimens in Zürich) also is a *Hockeria*, appears to be a junior subjective synonym of *H. liberator* (Walker, 1862) (**syn. nov.**).

Two more species were described under *Hockeria* but appear to belong to the genus *Lasiochalcidia* Masi in the present classification:

Lasiochalcidia melanaria (Cameron, 1905), **comb. nov.**, and

Lasiochalcidia munda (Waterston, 1916), **comb. nov.**

The changes are based on a study of the original material, mostly in the BMNH collections, and in connection with this, LECTOTYPES of the following species have been selected and designated: *Hockeria figurator* (Walker), ♂; *H. fulvipes* Masi, ♀; *H. liberator* (Walker), ♀; *H. minator* (Walker), ♂; *H. octodentata* (Cameron), ♀; *H. schulthessi* (Ferrière), ♀; *H. testaceitarsis* Cameron, ♂. All are in relatively good condition except *figurator* of which only the thorax and wings are preserved.

SOLENOCHALCIDIA Steffan

Solenochalcidia insolita (Walker), **comb. nov.**

Chalcis insolita Walker, 1871: 6, ♀♂. LECTOTYPE ♂ (here designated), (former) FRENCH SOMALILAND: Tadjoura (UM, Oxford) (examined).

Solenochalcidia bucculenta Steffan, 1951: 84–86, ♀♂. Holotype ♀, ALGERIA: Sidi Okba (MNHN, Paris) (examined). **Syn. nov.**

The original material of Hymenoptera belonging to the collection of J. K. Lord, on which Walker based his 1871 paper, was deposited in Cairo, Egypt, where it was later destroyed. However, Walker mentions in the Preface (l.c., p.iii) that the material was arranged by F. Smith, who apparently retained a few specimens, among them a male of *C. insolita* Walker, now deposited with a part of Smith's collection in the University Museum in Oxford. The specimen bears a printed label 'Tajura (Straits Bab-el-Mendeb)' and, in Smith's handwriting (according to Dr M. de V. Graham), 'Coll. Smith 1879' and 'insolita Wlk'.

Walker describes the thorax as red, which applies, as far as known from the more northerly specimens (Algeria, Israel), only to the female of this species, but he does mention both sexes. This seems to me to be sufficient to permit the selection of a male lectotype, apparently the only syntype now extant. It is only 5.2 mm in length (whilst the other specimens examined were 6.0–6.6 mm), but clearly the same as *Solenochalcidia bucculenta* Steffan, described so well by its author.

HYBOTHORAX Ratzeburg*Hybothorax palparicida* spec. nov., figs 15–19

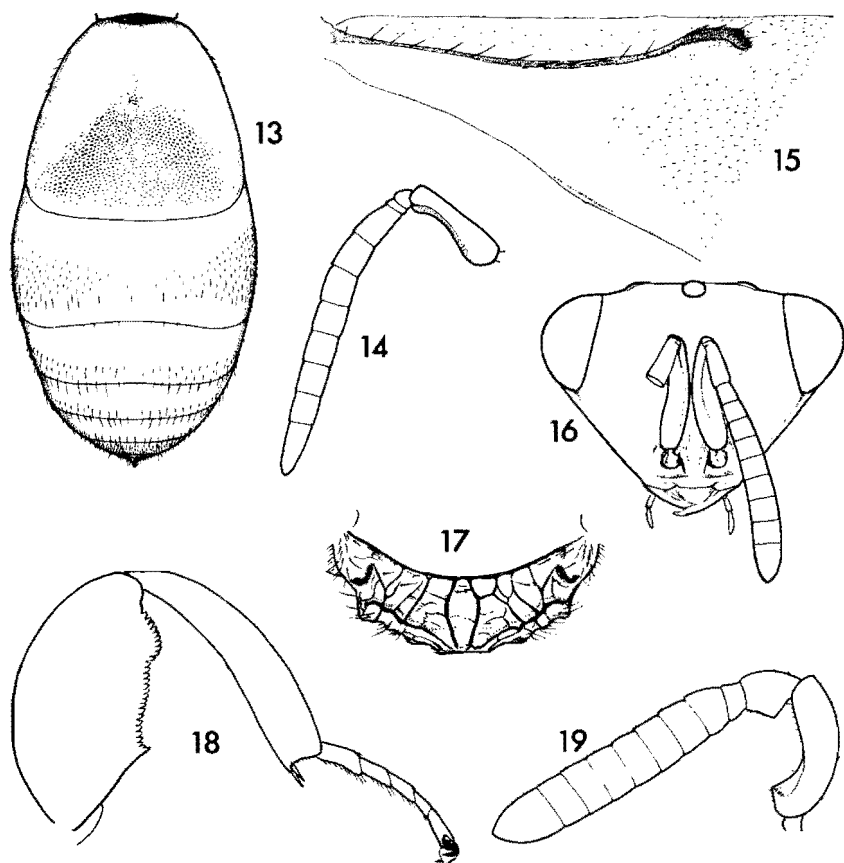
♀. 3,1–3,3 mm. Black; tarsi and narrow apices of tibiae and knees as well as ovipositorial sheaths, reddish testaceous. Wings almost hyaline, with slight yellowish infumation at marginal vein; venation brown.

Body moderately densely punctured, with whitish, rather long pubescence. Head in dorsal view about 2,35 times as broad as long, distinctly lunate, with temples short and rather strongly receding to the carinate margin, and frons distinctly convex. In facial view head (measured down to clypeal margin) about 1,4 times as broad as high (fig. 16). Scrobes very shallow, almost smooth, with weak alutaceous cross-striae; sides converging dorsad, scrobes at level of lower ocular line markedly narrower than the pilose parascrobal area. Back side of head ventrally at mandibular base and behind postgenal carina concave. Relative measurements: width of head 57, frons 32,5, eye 20:18, malar space 22, distance between lower margin of toruli and median ocellus 32,5, scapus 22, pedicellus 9, flagellum plus pedicellus combined 46. Scapus ventrally flattened, in lateral view in proximal three-quarters almost parallel-sided, apical expansion weak. Pedicellus dorsally 2,5 times as long as broad; flagellar segments 1 to 8 hardly increasing in length and very slightly in width, the first subquadrate, following ones slightly transverse; undivided clava 1,7–1,8 times as long as broad, shorter than preceding two segments together, with 4–5 perpendicular rows of fine longitudinal sensilla, area without sensilla ill-defined, in apical third.

Thorax as in *H. graffii* Ratzeburg, including the bituberculate apex of scutellum. Propodeum (fig. 17) medially short, fairly steep, in postero-dorsal view the sloping part relatively flat, with subelipsoidal median area and on each side usually with two accessorial carinae diverging from base and reaching the slightly irregular but strong posterior cross-carina (analogous to sublateral carina and, probably, to plica) which is highest sublaterally where reaching subtriangular area at each spiracle; part behind posterior carina steeply sloping; sides of propodeum vertical but short, suggesting a tubercle rather than a tooth not far behind spiracle. Metapleurum with subpolygonal coarse puncturation, without distinct interspaces. Mesosternal shelf in front of mid coxa as long as breadth of flagellum. Postero-lateral edge of fore coxa carinate. Legs strong, rather short; fore femur thickened, about 2,2 times as long as broad; hind femur (fig. 18) hardly more than twice as long as broad (basal tooth excluding), with comb extending over distal three-fifths, with distinct basal tooth and distal lobe; externally femur with dense long bristly pilosity directed obliquely apicad. Hind tibia about five times as long as broad at apex; maximum length of first tarsal segment (ventrally) greater than length of fifth segment (less claws which have the typical large basal lobe). Fore wing: pubescence extremely short, marginal fringe absent, basal third of wing bare as well as a streak below venation (fig. 15); marginal vein only one-seventh of costal cell but stigmal rudiment conspicuous.

Gaster about as long as thorax, dorsally convex, apically fairly pointed.

♂. 2,9–3,0 mm. Similar to ♀ except for the obtuse and shorter subovate gaster and short antennae (fig. 19): scapus slightly shorter than shortest eye diameter, strongly curved, ventral emargination reaching basal fifth, there ending by an obtuse-angular tooth; pedicellus stout, ventrally with obtuse-angular tooth; all flagellar segments transverse (except solid clava), the first not strongly anelliform, the second distinctly shorter ventrally than dorsally.



Figs 13–14. *Hockeria crassa* spec. nov. 13. Gaster of ♀ (puncturation indicated on basal tergite). 14. Antenna of ♂, outer aspect. Figs 15–19. *Hybothorax palparicida* spec. nov. 15. Fore wing, proximal area. 16. Head of ♀, anterior aspect. 17. System of carinae on propodeum, ♀. 18. Hind leg of ♂. 19. Antenna of ♂, inner aspect.

Host: *Palpares inclemens* (Walker) (Neuroptera, Myrmeleontidae).

MATERIAL EXAMINED. Holotype ♀ (plus 16 ♀ and 3 ♂, paratypes), SOUTH AFRICA: Zululand, Lake Shibuya, ex *P. inclemens*, 4.xii. 1971, M. W. Mansell. Holotype deposited in NCI, Pretoria, some paratypes also in BMNH, London.

Hybothorax palparicida is similar in many respects to the European *H. graffii* Ratzeburg, the type-species and now the only other species of the genus *Hybothorax* Ratzeburg, but at first glance differs greatly by the absence of the massive postero-lateral horns of the propodeum. This character, used for its simplicity in the keys to separate the genus *Hybothorax* from the other genera of the tribe Hybothoracini (figured for example in Bouček, 1952, pl. 15), made me think of the erection of a new genus

for the South African species. However, after preparing the description and comparing every character with the related species, I decided to place the new species in *Hybothorax*. It is much closer to *H. graffii* (this is the original, correct spelling) than to another species, *H. hetera* (Walker), which was previously (Bouček, 1952) placed in that genus. *H. hetera* became the type-species of *Neohybothorax* Nikolskaya, 1960, following a suggestion made by Steffan (1959: 306).

The more important characters shared by *H. graffii* and *H. palparicida* are mainly the shape of head, including the antennae and mandibles, shape of thorax except sides of propodeum, the form of legs except hind femur but including the strongly bent and short claws with large basal lobe, and the shape of the basal tergites of the gaster. Apart from different dimensions of various parts of the body, largely connected with shorter and stronger antennae and legs, *H. palparicida* differs from *H. graffii* mainly by its toothless propodeum, rather broad hind femur with longer comb on two broad teeth (or lobes), the different relation of the hind tarsal segments, and in having the gaster not sub-depressed dorsally and therefore not subtriangular in cross-section.

PTEROMALIDAE

WASHAMIA gen. nov.

Type-species: *Washamia versicolor* spec. nov.

Head and thorax with dense, usually deep reticulation, but pubescence inconspicuous, very short. Head large. Occiput delimited dorsally by arcuate edge, more distinct in ♀ in which vertex is of normal size; in ♂ vertex very narrow due to great enlargement of eyes, ocellar triangle very high, lateral ocelli touching eyes (fig. 22). Eyes bare, ventrally subangulate, inner orbits more or less converging upwards. Scrobes shallow, not well delimited, in *W. versicolor* on bottom with two finely impressed subparallel longitudinal lines but scrobes much reduced in the other species. Antennal toruli below centre of face, at or slightly above lower ocular line. Malar space short; clypeus poorly delimited, its lower margin produced, arcuate. Mouth very broad; mandibles four-toothed, lower edge almost straight. Antennae in both sexes short (figs 20, 22, 23, 26), formula 1153, i.e. without distinct anelli; all funicular segments combined shorter than slender scapus; pedicellus elongate.

Pronotum strongly reduced, simple, without collar. Mesoscutum strongly convex anteriorly, with complete narrow notaular furrows. Scuto-scutellar suture moderately sinuate; scutellum strongly convex, elongate, bordering broadly on mesoscutum; frenal part separated sculpturally or by a fine groove; axillulae (on sides) high, almost smooth. Matanotum broad, its sides smooth, dorsellum subvertical, dorsally with narrow transverse crest which sometimes leans on scutellar apex. Propodeum generally nearly smooth, medially convex, median carina often indicated; plicae distinct only posteriorly (sometimes disappearing there in coarse alveolae), connected with the narrowly raised nuchal strip; spiracles touching metanotal margin; supra-coxal fovea large; callus bare or nearly so. Prepectus rather large, triangular. Legs not strong; basitarsus the longest tarsal segment; hind tibia with two spurs, outer one hardly half as long as inner spur. Fore wing in ♀ (figs 20, 24, 25) with brownish cross-bands, in ♂ hyaline, always extensively bare, pubescence sparse and often extremely short; venation: submarginal vein with very few bristles; parastigma proximally widened and dark, distally straight and smoothly joining the long slender marginal vein; postmarginal vein very short, the stigmal short and with distinct knob-like stigma.

Gaster sub sessile, distinctly compressed from sides, high, about as long as thorax or still shorter. In ♀ epipygium with short exposed ovipositorial sheaths upturned; hypopygium reaching about middle to three-quarters of gaster.

Biology. The Malayan species was reared from gall-making Cecidomyiidae. Possibly also the African species are parasites of Cecidomyiids, as are the European species of related genera.

Apparently no closely related genus is known from Africa or Asia. The large eyes in the males of *Watshamia* remind one of some species of the holarctic genus *Pirene* Haliday, although in many respects it looks quite different. The characters which separate *Watshamia* from *Pirene* and all known related genera are: conspicuous deep fine reticulate puncturation of head and thorax combined with bright metallic colours, unusually convex thorax, five distinct funicular segments in the antenna, and the poorly developed pronotum. In Graham's classification of Pteromalidae (1969) *Watshamia* seems to link still more closely the tribes Ormocerini and Pirenini of the subfamily Miscogasterinae than any other known genus. In my view, in spite of well developed five funicular segments, it is closer to Pirenini, if the tribes are retained.

The genus is named in honour of my friend Rev. A. Watsham of Salisbury, Rhodesia.

Key to the species of *Watshamia*

- 1 Antennae inserted at level of lower extremities of eyes (fig. 23); narrow hind margin of mesoscutum and inner corner of axilla shiny, smooth; in ♀ fore wing with narrow parastigmal band and a broad band at stigmal vein (fig. 24); southern Africa . . . **turneri**
- Antennae inserted distinctly above lower ocular line; thorax everywhere with distinct deep sculpture; pattern of wing infumation otherwise 2
- 2 Fore wing in ♀ with two rather narrow and incomplete bands (fig. 20); antennal flagellum distinctly longer than scapus, its first segment not transverse; in ♀ hind margin of eye convex, in ♂ emarginate; southern Africa **versicolor**
- Fore wing with one broad fascia below marginal vein (♀; fig. 25); flagellum about as long as scapus, all funicular segments strongly transverse (fig. 26); hind margin of eye slightly emarginate; south-east Asia **malaica**

Watshamia versicolor spec. nov., figs 20–22

♀. 2,5–3,1 mm. Body with metallic colours varying in extent and intensity but mainly with dark greenish-blue or blue tinge on: vertex, a transverse spot on mid lobe of mesoscutum, its side lobes posteriorly, on axillae, top of scutellum, propodeum, sides of thorax, hind coxa, femora and tibiae, and on sides of gaster; mesoscutum otherwise golden red, scutellum mainly purpureous, its sides bright green, face bluish green, dorsum of gaster bluish to black; scapes testaceous, flagellum black with metallic green tint, tarsi and sometimes a line apically on outer edge of fore and mid tibiae pale yellow; thorax ventrally including fore coxae and sides of pronotum sometimes testaceous. Wings hyaline, fore wing with two partial crossbands (fig. 20), parastigma pale between dark thickening and marginal vein.

Head in dorsal view 2,1–2,2 times as broad as long, temples appearing slightly less than a quarter of length of eyes. POL 1,3–1,5 times OOL; ocellar triangle 1,75–1,95 times as broad as high. Reticulation turning to cross-striation posteriorly on vertex, obliterated between eye and lateral ocellus and there usually with a few coarser punctures. Head in facial view shown in fig. 21. Relative measurements: width of head 49, frontovertex 28, eye 31:18,5, malar space 9, mouth 26,5, scapus 23,5, flagellum plus

pedicellus 38. Scapus nearly reaching ventral margin of ocellus; each flagellar segment with one row of distinct longitudinal sensilla, first segment about as long as broad, following ones transverse.

Pronotum finely cross-striate. Mesoscutum very strongly convex anteriorly, with fine reticulate puncturation deep even at hind margin; hind margin of lateral lobe with subangulate emargination for axilla, angle between deep notaular furrow and axilla less than 45° . Scutellum with straight frenal furrow slightly behind middle, frenum nearly 1.5 times as long as propodeum medially; dorsally scutellum with dense fine granulate rasp-like sculpture suggesting transverse rows, sculpture reduced to fine reticulate puncturation in smaller specimens. Propodeum sublaterally at hind margin with coarse areolation. Upper half of mesepimerum smooth, furrow separating it from lower part deep, slightly curved. Hind coxa reticulate, dull, dorsally bare. Dorsal surface of wings virtually bare, fore wing without conspicuous marginal fringe; otherwise see fig. 20.

Gaster shiny, almost bare, basally smooth, apicad with increasingly distinct alutaceous reticulation orientated transversely. Hind margin of first tergite with angular excision; following tergites little different in length. Epipygium swollen subbasally, saddle-like subapically; cerci longer than broad, situated at postero-lateral margin, their bristles short.

♂. 2.0–2.6 mm. Metallic colours duller than in ♀, mainly bluish green, on mesoscutum sometimes more brightly green to golden. Scapes metallic. Differs from ♀ mainly in the much larger eyes and hyaline wings which retain, however, darker colour of parastigma and stigma. For dorsal aspect of head see fig. 22. Relative measurements: width of head 47, frontovertex 7, eye 34:26, malar space 6, flagellum plus pedicellus 32. Lower third of eye with abruptly smaller facets. Gaster compressed, dorsally subcarinate in dry specimens.

Biology unknown.

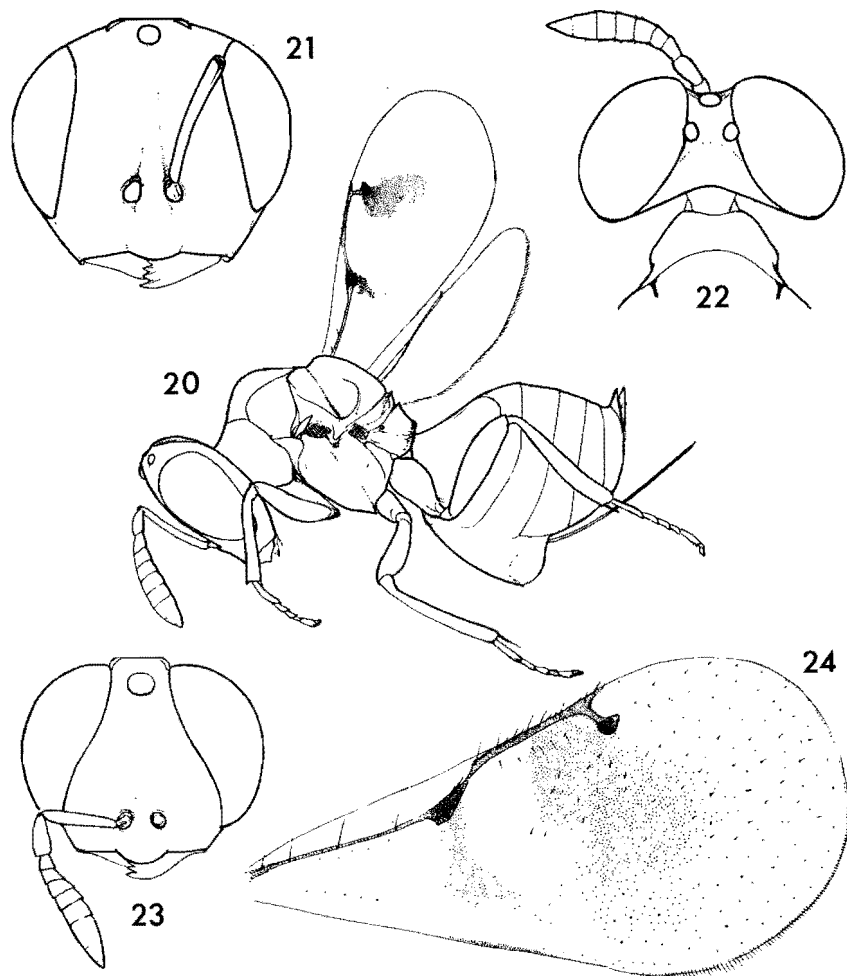
MATERIAL EXAMINED. Holotype ♀, SOUTH AFRICA: Cape Province, Pondoland, Port St. Johns, ii.1924, R. E. Turner; deposited in BMNH, London.

Paratypes. RHODESIA: Salisbury, 18 & 29.ix. & 3.x.1970, 3♂ 1♀, A. Watsham. SOUTH AFRICA: Port St. Johns, iii.1924, 1♀; Mossel Bay, xi.1921, 1♀, both R. E. Turner. Paratypes also in NCI, Pretoria and Watsham Collection, Salisbury, Rhodesia.

***Watshamia turneri* spec. nov., figs 23–24**

♀. 1.9–2.2 mm. Shinier than *W. versicolor* owing to shallower sculpture; metallic colours less delimited, dorsal side of body mainly bright bluish green with brighter blue to violaceous spots turning coppery on anterior part of mesoscutum, dark green on face turning blackish, also legs darker and less bright metallic, gaster dorsally black; scapes infusate. Fore wing pattern see fig. 24.

In addition to difference summarized in the key the following characters may be stressed. Temples in dorsal view less than one-quarter of eye length; POL 1.1–1.2 times OOL; ocellar triangle about 1.5 times as broad as high. Scrobes barely distinct; frons at inner orbits narrowly smooth, orbits sinuate. Relative measurements: width of head 37, frontovertex 22, eye 22:14.5, malar space 4.5, mouth 20, scapus 16.5, flagellum plus pedicellus 25.5. All funicular segments transverse; first segment narrowing basad, at apex as broad as pedicellus and hardly more than half as broad as fifth segment.



Figs 20–22. *Watshamia versicolor* gen. spec. nov. 20. ♀. 21. Head of ♀, anterior aspect. 22. Head and pronotum of ♂, dorsal aspect. Figs 23–24. *W. turneri* spec. nov. 23. Head of ♂, anterior aspect. 24. Fore wing of ♀.

Pronotum medially nearly smooth, short. Mesoscutum less convex than in *W. versicolor*, reticulate puncturation shallower and mostly lengthened transversely, posteriorly becoming obliterated. Shallow frenal groove in two-thirds of scutellum, sculpture anteriorly consisting of longitudinal striolation, posteriorly on frenum wide-meshed polygonal reticulation. Propodeum postero-sublaterally with several alveolae separated by longitudinal rugae. Fore wing with some very sparse hairs and partially developed marginal fringe as indicated in fig. 24.

Gaster shorter than thorax, less compressed from sides than in *versicolor*, in some dry specimens distinctly sunken dorsally; in normal position epipygium probably not up-turned.

♂. 1,8–2,1 mm. With smaller size sculpture still shallower than in ♀, colours mainly bright bluish, mesoscutum anteriorly bright green, frons and gaster dorsally blackish. Wings hyaline, venation pale except for dark thickening of parastigma and the stigma. Head in anterior view and antenna shown in fig. 23. Smaller facets taking up lower two-fifths of eye. Relative measurements: width of head 37, frontovertex 7, eye 26,5:20, malar space 4, scapus 16, flagellum plus pedicellus 26. Flagellum slenderer than in ♀, therefore some of the segments appearing less transverse in certain views (basal ones normally slightly asymmetric), clava more acuminate, longitudinal sensilla sparser, pubescence slightly more conspicuous. Marginal fringe of fore wing developed. Gaster strongly compressed from sides.

Biology unknown.

MATERIAL EXAMINED. Holotype ♀, SOUTH AFRICA: Cape Province, between George and Uniondale, xii.1973, A. Watsham; in BMNH, London.

Paratypes. SOUTH WEST AFRICA: Aus, xi.1929, 1♀, R. E. Turner. SOUTH AFRICA: with holotype, 1♀ 2♂, A. Watsham; Katberg, 1 300 m, iii.1933, 1♀, R. E. Turner; Port St. Johns, iii., v., vi. & x.1923, 2♀ 2♂, R. E. Turner. Deposited in BMNH, NCI, Pretoria and Watsham Collection.

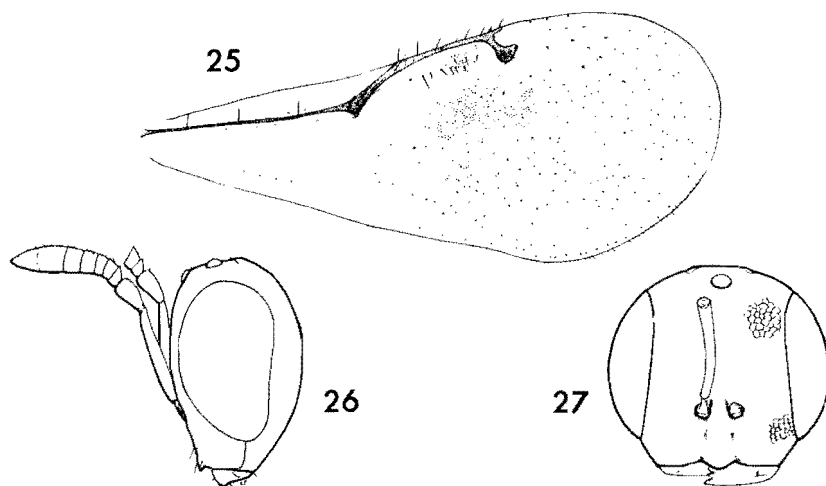
Named after R. E. Turner.

***Watshamia malaica* spec. nov., figs 25–27**

♀. 1,8 mm. Body extensively dark cupreous, with metallic tint turning to green mainly on face, sides of thorax and on gaster; mesoscutum and scutellum slightly reddish golden; antennae and legs extensively dark testaceous, including fore and mid coxae, but hind coxa metallic; infusate parts of femora and tibiae with a metallic tint; tarsi whitish. Wings hyaline with broad brown band on fore wing as shown in fig. 25.

Head dorsally about 1,85 times as broad as long, with very distinct temples slightly less than one-third as long as eyes. POL only about 0,75 OOL; ocellar triangle barely 1,5 times as broad as high. Occipital ridge indistinct and more than one ocellar diameter behind ocelli. Anterior and lateral aspects of head shown in figs 26–27. Relative measurements: width of head 41, frontovertex 24, eye 28,5:18, malar space 6, mouth 20, scapus 17,5, flagellum plus pedicellus 26. Scapus reaching one ocellar diameter below ocellus; three proximal segments of funicle more transverse than two distal ones.

Pronotum very low and narrow, cross-reticulate. Mesoscutum, axillae and scutellum almost regularly reticulate-punctured, dull, sculpture fine but deep. Frenum taking up less than one-third of scutellum, not separated by distinct groove; axillula



Figs 25–27. *Watshamia malaica* spec. nov. 25. Fore wing of ♀. 26–27. Head of ♀, lateral and anterior aspect; meshes of reticulate puncturation partly indicated.

nearly smooth. Dorsellum with distinct rugosity. Venation and rudimental pubescence of fore wing as shown in fig. 25.

Gaster distinctly compressed from sides, dorsally sunken only at base. Petiole distinct, only slightly transverse, smooth. Epipygium up-turned; hypopygium reaching near to apex in holotype, perhaps about two-thirds along gaster in normal position. ♂. Unknown.

Biology. Reared from gall of *Asphondylia* sp. (Dip., Cecidomyiidae) on *Dryobalanops aromatica* Gaertn., a tree known by its camphor.

MATERIAL EXAMINED. Holotype ♀, WEST MALAYSIA: Johore, Mersing, 6.ix.1955 (Dept. Agric., per C.I.E.); deposited in BMNH, London.

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